

L 7971-66 EWT(m)/ETC/ENG(m)/T DS

ACC NR: AP5025082

SOURCE CODE: UR/0364/65/001/010/1235/1244

AUTHOR: Gurevich, I. G.; Bagotskiy, V. S.

ORG: Heat and Mass Transfer Institute AN BSSR (Institut teplo- i massobmena AN BSSR)

TITLE: Liquid porous electrodes in unsteady state operation. I. The galvanostatic case with diffusion feed of the reagent

SOURCE: Elektrokimiya, v. 1, no. 10, 1965, 1235-1244

TOPIC TAGS: electrode, electrolytic cell, cathode polarization

ABSTRACT: The article treats the subject of transitional processes in porous electrodes. A porous electrode is placed in an electrolytic chamber which contains the electrolyte mixture, along with the reagents and the reaction products. In examining the transport stage of the electrolytic process there are considered only the flows of electroneutral substances (reagents and products); it is assumed that their transfer in the electrode-electrolytic chamber system consists only in molecular diffusion. It is further assumed that the concentrations of the ionic com-

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UDC: 541.13

L 7971-66

ACC NR: AP5025082

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ponents of the working mixture are considerably larger than the concentrations of the electroneutral reagents and products. The article gives an analytical solution for the problem of a transition process taking place in a liquid porous electrode of finite thickness, with diffusion feed of the reagent. A solution is given to the problem for galvanostatic operating conditions, taking into account chemical (activation) and concentration boundaries, as well as ohmic losses with a small degree of polarization. Expressions are given for calculating a number of characteristics of the transition process, among them the measured degree of polarization. "The authors take the opportunity to thank L. A. Pott for discussing the work." Orig. art. has: 28 formulas and 2 figures 44 55

SUB CODE: GC/ SUBM DATE: 26Apr65/ ORIG REF: 005/ OTH REF: 005

OC
Card 2/2

GUREVICH, I.G.; BAGOTSKIY, V.S.

Quasi-stationary relation for capillary-porous elements of chemical reactors. Inzh.-fiz. zhur. 10 no.1:55-59 Ja '66.

(MIRA 19:2)

1. Institut teplo- i massoobmena AN BSSR, Minsk. Submitted August 8, 1965.

GUREVICH, I.I.

MEDVEDEV, N.N., kandidat biologicheskikh nauk; GUREVICH, I.I. [translator];
MEL'NIKOVA, Ye.I., tekhnicheskii redaktor.

[Problems in aviation medicine] Voprosy aviatsionnoi meditsiny; Moskva,
Izd-vo inostrannoi lit-ry, 1954. 283 p. (MLRA 8:2)
(Aviation medicine)

GUREVICH, I.I.

ARMSTRONG, H.G.; GUREVICH, I.I. [translator] KROTKOV, F.G., professor,
redaktor; ~~IZATKINOV~~, L.P., redaktor; BELEVA, M.A., tekhnicheskii
redaktor

[Aviation medicine. Translation from the English] AviatSIONnaia
meditsina. Perevod s angliiskogo I.I.Gurevicha, Pod red. i s predisl.
F.G.Krotkova. Moskva, Izd-vo inostrannoi lit-ry, 1954. 521 p.
(Aviation medicine) (MIRA 8:4)

GUREVICH, I.I. [translator]; IVANOV, V.I., doktor med.nauk, red.;
KRUGLIKOV, F.F., red.; IOVLEVA, N.A., tekhn.red.

[A man under high-altitude and space flying conditions; collected translations from foreign periodicals] Chelovek v usloviakh
vysotnogo i kosmicheskogo poleta; sbornik perevodov iz inostran-
noi periodicheskoi literatury. Pod red. V.I.Ivanova. Moskva,
Izd-vo inostr.lit-ry, 1960. 462 p. (MIRA 13:5)
(AVIATION MEDICINE) (SPACE MEDICINE)

GUREVICH, I.I.[translator]; YAZDOVSKIY, V.I., prof., red.; POPOV,
I.G., red.; BALDINA, N.F., tekhn. red.

[Problems in space medicine; a collection of articles by
foreign authors]Voprosy kosmicheskoi meditsiny; sbornik sta-
tei zarubezhnykh avtorov. Moskva, Medgiz, 1962. 323 p.
(MIRA 15:9)

(SPACE MEDICINE)

GUREVICH, I. I.

"Character of the Absorption of Slow Neutrons in Dysprosium and Gadolinium," by I. I. Gurevich and N. G. Meshcheryakov, Zhur. Eksper. i Teor. Fiz., Vol 7, p.1274, 1937

PROCESS AND PROPERTIES INDEX																									
1ST AND 2ND ORDERS													3RD AND 4TH ORDERS												
<p>290. Energy Levels of a Heavy Nucleus. I. Gurevitch. <i>Phys. Zeits. d. Sowjetunion</i>, 12. 4. pp. 489-490, 1937. In English.—In a recent paper, Landau (see Abstract 2674 (1937)) has given an approximate formula for the number of levels of a liquid model of an atomic nucleus with the excitation energy between 0 and ϵ, viz. $n(\epsilon) = e^{\sqrt{\epsilon}}$, where α is a constant in the expression of the free energy $F = -\frac{1}{2} \alpha \Theta^2$, $\Theta = kT$. The formula of Landau is only logarithmically true, and the author now puts forward a better solution, the ratio of his approximate expression (and not merely of its logarithm) to the exact value tending to 1 with $\epsilon \rightarrow \infty$ (it becomes practically 1 as soon as $n(\epsilon) \gg 1$), viz., $n(\epsilon) = \sqrt{\epsilon} / 2\pi k \Theta^2$. These formulae lead to the following result for the distance between two neighbouring resonance levels: $D = 2\pi K^{1/2} \Theta^{1/2} e^{1/4 \sqrt{\epsilon} / k}$, where K is the moment of inertia of the nucleus (supposed to be spherical), σ is the entropy, and k is Planck's constant divided by 2π. Landau's result was $D = \sqrt{2\pi} K^{1/2} \Theta^{1/2} e^{1/4 \sqrt{\epsilon} / k}$.</p> <p style="text-align: right;">H. H. Ho.</p>																									
<p>AS 55.6 METALLURGICAL LITERATURE CLASSIFICATION</p>																									

COMMON ELEMENTS										RARE EARTH ELEMENTS										ACTINIDE ELEMENTS									
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS										5TH AND 6TH ORDERS									
<p>Distribution of nuclear levels. I. I. Gurevich and G. R. Rik. <i>Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. phys.</i> 1938, No. 5 6, 771-8 (in English, 780); cf. <i>C. A.</i> 32, 2121².--The distribution of nuclear levels for light and heavy nuclei is discussed. The excitation curve of Be^9 for the (α, n)-process for the energies of α-particles ≤ 8.8 m. e. v. was studied by means of a proportional counter with solid Li as a detector for slow neutrons. The resonance max. at α-particle energies 3.7, 7.7 and 8.6 m. e. v. were found. Two of them lie higher than the potential barrier of Be^9; this can be explained in terms of Bohr's views on the formation of an intermediate "compd." nucleus. The intervals between the levels of the excited "compd." C^{12} (the energies of the levels are 13.1, 15.8 and 16.5 m. e. v.) are much greater than those calcld. from the static theory of the nucleus. An equation giving the distribution of the intervals between the levels around their mean value was deduced. A method is developed for detn. of the intervals between the levels of the resonance capture of slow neutrons from the distribution of the capture cross sections for C neutrons for the given group of elements. The chaotic character of the distribution of the intervals between the nuclear levels of the rare earth elements around their</p>																													
<p>mean value was verified. The mean intervals between the levels of the resonance capture of slow neutrons were evaluated for groups of elements with a mean at. wt. 110, 160 and 185, and found to be 0.15 m. e. v., 3 m. e. v. and 8-10 m. e. v., resp. A max. was established for the d. of nuclear levels for the capture of slow neutrons in the region of the rare earth elements. W. R. Henn</p>																													
<p>12-AK-Nank SSSR, Ser. Fil.</p>																													

PROCESSES AND PROPERTIES OF
 Disintegration of atomic nuclei by cosmic rays. I. I. Gurevich, A. P. Zhulanov and A. N. Filippov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 1621 (1948). With photographic plates with special, thick Emulsion (50 μ) of. Zhulanov, C. A. 20, 717 (1959) contg. the disintegration of at. nuclei by cosmic rays was studied. The plates were kept for 10-20 days completely protected from light, neutrons, and α , β , and γ -rays, and then developed. Over 10,000 disintegrations emitting 1-5 particles each were observed. Proton showers accompanying proton range were observed. Processes accompanying proton emission gave particles with a mass intermediate between those of electron and proton. The energy requirement is of the order of tens of millions of electron volts.
 P. H. Rathmann

Zhm. Eksp. i Teor. Fiz.

GUREVICH, I. I.

"A Method of Defining the Energy Spectrum of Fast Neutrons," Zhur. Eksper. i
Teoret. Fiz., Vol 8, p. 791, 1938

COMMON EXTENTS		PROCESSES AND PROPERTIES INDEX	
MATERIALS INDEX		E-2	
<p>The absorption of slow neutrons in dysprosium and cadmium. I. I. Gorevich and M. G. Meshcheryakov. <i>Physik. Z. Sowjetunion</i> 13, 151 (1968) in English. Approx. 97.8% of the activity of neutron bombarded Dy is due to β-electrons and the remainder to faster ones. This, together with the great activation capacity of Dy, makes it a convenient indicator for experiments with thermal neutrons (activity $Dy = 0.013$, activity $Mn = 20,000$). Neutrons passing through Cd and activating Dy have an energy of approx. 0.1 e.v. and an absorption coeff. in H of 7.5 sq. cm/g. The principal absorption in Dy is due to Dy^{163} and the true effective cross section of Dy for the absorption of thermal neutrons is 2.5 x 10⁶ sq. cm. Absorption coeffs. of β-neutrons and Dy resonance neutrons in Cd are found to be 8 and 0.1 sq. cm/g., resp. The Cd resonance band is at 0.1 e.v. and its width is 0.18 e.v. I. H. Dunkelberger</p>			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>1968-11-10</p>			

GUREVICH, I. I.; FILIPPOV, A. N. and ZHDANOV, A. P.

"The Disintegration of Atomic Nuclei by Cosmic Rays," Zhur. Fiz, USSR, No.1,
p 51-65, 1939 (in English). See C.A. 33, 4867⁷.

117 AND 118 CROSS												119 AND 120 CROSS											
COMMON ELEMENTS																							
METALLURGICAL LITERATURE CLASSIFICATION																							
<p>CA</p>												<p>✓</p>											
<p>Properties of the energy spectrum of heavy nuclei. I. I. Gurevich. <i>J. Exptl. Theoret. Phys. (U. S. S. R.)</i> 9, 1289-90 (1969); <i>cf. C. A.</i> 32, 2431¹⁰.—From a detailed consideration of the relation between the distribution of the cross section for capture of hot neutrons and the av. distance between resonance levels, G. finds an obvious min. in the distance between the energy levels in the rare earths, and explains this phenomenon on the basis of a phase transition of the nucleus, a change of state of the nuclear material analogous to that in liquid He. F. H. Rathmann</p>																							
<p>Zhurn. Eksp. i Teor. Fiz.</p>																							
<p>121 AND 122 CROSS</p>												<p>123 AND 124 CROSS</p>											
COMMON ELEMENTS												COMMON ELEMENTS											
METALLURGICAL LITERATURE CLASSIFICATION																							

The metastable levels of the gadolinium nucleus.
D. G. Alkhazov, I. Gurevich, I. Kurchatov and V. N. Rukavishnikov. *Compt. rend. acad. sci. U. R. S. S.* 23, 111-13 (1930) (in English).—Gd was irradiated by slow neutrons and the intense soft radiation measured by absorption with various thicknesses of cellophane, Al, Cu and Sn. The radiation is shown to be electronic, being of the order of 100 e. kv. (with an Al absorber 4.8 mg. per sq. cm. thick). The authors conclude that the Gd isotope, which absorbs slow neutrons, and shows no artificial radioactivity, is characterized by a metastable state leading to processes of internal conversion. P. Gonet

Phase transitions in nuclear matter. I. I. Gurevich, *Bull. acad. sci. U. R. S. S. Ser. phys.* **6**, 330 (1971) (in English, **311**) (1970). — Studies of neutron-capture cross sections indicate that the distances between the excited nuclear levels are exceptionally small in the region of rare earths. Using Landau's relation $D \sim e^{-\alpha A^{1/3}}$ for the dependence of level spn. D on the nuclear entropy S indicates that in this region of at. wt. S must have a sharp max. However, if the temp. of the nucleus is proportional to some power of excitation energy (Landau, Weisskopf, Bethe), the value of D should be a monotonic function of at. wt. A for given excitation energy E . This fact suggests that nuclei may be in different thermodynamic states at different temps., i. e., that there exist phase transitions of nuclear matter. Roksana Gamov

Iz. Ak. Nauk SSSR.

acc. Fij.

Roksalana Ginnow

GUREVICH, I. I.

USSR/Nuclear Physics - Varitrons
Nuclear Physics - Cosmic Rays

Jul 49

"Observation of Varitrons of Various Masses in Photographic Plates," A. I. Alikhanyan, D. M. Samoylovich, I. I. Gurevich, Kh. P. Babayan, R. I. Gerasimova, Inst of Phys Problems, Acad Sci USSR, Phys, Inst, Acad Sci Armenian SSR, 3 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 7

Introduces results of studying separate traces of charged cosmic particles. Traces used were at least 200 microns long. Ends of traces lay in the emulsion film. These tests again confirmed existence of varitrons with masses up to 10,000 times the mass of an electron. Submitted 9 Apr 49.

PA 51/49T56

GUREVICH, I. I.

USSR/Nuclear Physics - Varitrons
Nuclear Physics - Cosmic Rays

Jul 49

"Disintegration of Heavy Varitrons," A. I. Alikhanyan, D. M. Samoylovich, I. I. Gurevich, Kh. P. Babayan, Phys Inst, Acad Sci Armenian SSR, Inst of Phys Problems, Acad Sci USSR, 4 pp

"Zhur Eksper i Teor Fiz" Vol XIX, No 7

Results of investigations of traces caused by cosmic particles in photographic emulsions. Established that at least six groups of trajectories were caused by varitrons with masses 180-200, 320-350, 650-700, 950-1,000, 3,500-4,000 and 8,000-10,000 times the electron mass. Submitted 9 Apr 49.

PA 51/49T55

GUREVICH, I. I., POMERANCHUK, I. Ya., SPIVAK, P. Ye., YEROLIMENY, V. G.,
and STOLYAROV, G. A.

"Theory of Resonance Absorption in Heterogeneous Systems".

Report appearing in 1st Volume of "Session of the Academy of Sciences USSR
on the Peaceful use of Atomic Energy, 1-5 July 1955", Publishing House of Academy
of Sciences USSR, 1955.

SO: Num 728, 28 Nov 1955.

GUREVICH, I. I.

Yod
RML

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EXCITED STATES OF NUCLEONS. I. I. Gurevich.
Doklady Akad. Nauk S.S.S.R. 105, 69-72 (1965) Nov. 1.
(in Russian)

The work is concerned with the further development
of the theory of hyperon formation from the study of states
of excitation of nucleons. Only the metastable states of the
nucleon with the mean life of $\sim 10^{-11}$ sec are discussed.
(R. V. J.)

PH
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GUREVICH, I. I.

✓2849

OBSERVATION OF FORMATION AND DECAY OF UN-
STABLE PARTICLES IN EMULSION CHAMBERS; V. V.

Alpers, R. I. Gerasimova, I. I. Gurevich, A. P. Mishakova
and L. B. Surkova. Doklady Akad. Nauk S.S.S.R. 105, 236-
9 (1955) Nov. 11. (In Russian)

Track tracings of unstable particles were recorded on
emulsion film. Gases of associated stars were studied to
find K^0 mesons associated with Λ^0 and other particles.
Investigations of 4-prong stars to find π mesons and 2-
prong stars to find hyperons were made. 398 tracks of π
mesons were measured, 214 of which were formed inside
of the emulsion chambers. An area of emulsion of 20cm²
was analyzed. (R.V.J.)

PH

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Translation D 419421 - p.19

GUREVICH, I.I.

publ.: November 21st 1955

rec.: January 30th 1956

reviewed: February 3rd 1956

transl.i.e.: February 7th 1956

605

Dokl. Akad. Nauk, 105, 451-453 (1955)

On the Spin and Parity of the T -Meson. (Russian)

by I.I. GUREVICH, A.P. MISAKOVA

(2) (over)

Translation D 419421 p. 21

I. I. Gurewicz, etc.

According to the author's opinion the statement made by E. AMALDI, E. FABRI et al. (Suppl. Nuovo Cimento, 12, 419 (1954)) to the effect that the T -meson has the spin 0 or 1 and anti-symmetry, is incomplete because a T -act of decay may belong to group b or group c. With the acts of decay hitherto observed it is true for the charge signs (in brackets) of the pions which are produced on this occasion, the complete traces of which are present in the emulsion, that: 15 $(+-)$ + 3 $(++)$ + 15 $(+-)$ + 1 $(-)$. 31 cases belong to the domains a, b, or c; 3 cases belong to two different domains (b and c) because of the similarity of the energies of the negative and

I. I. Gurev, Jr.

of the positive pions. The following distribution of all π^+ -mesons over the FABRI domains is the most probable: $n(a) = 11$, $n(b) = 12$, $n(c) = 11$. From PEARSON'S probabilities, according to which a pion which has the opposite charge with respect to the T -meson belongs to the domains a , b , and c , there follow with the greatest probability the cases (0-) and (3-). The spin of the T -meson is not equal to 1. The more sensible analysis of the 31 pure cases alone leads to the following distribution: $n_a = 11$, $n_b = 10$, $n_c = 10$; in that case the most probable spin value of the T -meson is $S = 0$, and it has asymmetry. With even more exact conditions prevailing, $S_T = 1$ and $S_T = 2$ are strictly excluded.

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and the cases (3-) and/or (0-) have PEARSON'S probabilities 0.28 and 0.30 respectively. Thus, the T-meson is most probably, just like the pion, a pseudoscalar particle. In spite of the similarity of its mass $m_T = (965.5 \pm 0.7) m_e$ to that of the θ -meson $m_\theta = (965 \pm 10) m_e$, the θ - and the T-meson are different particles, because, according to I.S. ŠAPIRO (Žurn. eksp. i teor. fis., 27, 257, (1954)) they could otherwise not have the spin 0. If the T-meson is really pseudoscalar, it has the following alternative decay scheme: $T^+ \rightarrow \pi^+ + \pi^+ + \pi^-$ and $T^+ \rightarrow \pi^+ + \pi^-$. Because of the analogy with the newly discovered decay of K-mesons ($K_{\mu 2} \rightarrow \mu + \nu$) the exact determination of the mass of the $K_{\mu 2}$ -meson is of utmost importance.

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RML

CURETICH, R. I.

Observation of the genesis and decomposition of a
stably excited in an emission chamber. V. V. Abov
V. V. Abov and L. V. Rubtsov, Soviet Phys. Dokl.
1964, 15, 1151. (English translation). See C. A. 51, 1151
R. M. R.

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Cont. 1/2

ALPERS, V.V.; GUREVICH, I.I.; SURKOVA, L.V.

Emulsion chamber observations on unstable particle production and decay. Dokl.AN SSSR no.3:421-422 My '56. (MLRA 9:8)

1. Predstavleno akademikom L.A. Artsimovichem.
(Cosmic rays) (Ionization chambers) (Photography,
(Photography, Particle track)

GUREVICH, I.I.

3990

PROVIDE INFORMATION TO PERSONS IN PHOTOGRAPHIC

GUREVICH, I I

Category : USSR/Nuclear Physics - Elementary Particles

C-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3130

Author : Alpers, V.V. Barkov, L.M., Gerasimova, R.I., Gurevich, I.I., Muskhin, K.H., Nikol'skiy, B.A., Toporkova, E.P.

Title : Production of Slow π^{\pm} -mesons in the Nuclei of Photographic Emulsion by 460 Mev Protons and Neutrons of 400 Mev Effective Energy.

Orig Pub : Zh. eksperim. i teor fiziki, 1956, 30, No 6, 1025-1033

Abstract : The emulsion-camera procedure was used to study the production of charged π -mesons by 460 Mev protons and by neutrons of 400 Mev effective energy.

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GUREVICH, I.I.

Category : USSR/Nuclear Physics - Elementary particles

C-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3129

Author : Alpers, V.V., Barkov, L.M., Gerasimova, R.I., Gurevich, I.I.,
Mishakova, A.P., Mukhin, K.N.

Title : Production of Slow π^+ Mesons in Photographic Emulsion Nuclei by 660 Mev Protons.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 6, 1034-1039

Abstract : The emulsion camera procedure was used to study the production of slow π^+ mesons in the nuclei of the emulsion by the action of 660 Mev protons: The procedure used made possible an effective study of the stars with the production of slow π mesons, and also the energy and angular spectra of the slow π mesons produced in the nuclei.

Card : 1/1

GUREVICH, I.I.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1463
 AUTHOR GUREVICH, I.I., PEVZNER, M.I.
 TITLE The "Repulsion" of the Nuclear Level.
 PERIODICAL Zurn.eksp.i teor.fis, 31, fasc.1, 162-164 (1956)
 Issued: 9 / 1956 reviewed: 11 / 1956

The data obtained by the methods of neutron spectroscopy concerning the arrangement and the parameters of nuclear levels at excitation energies of the order of the binding energy of a neutron permit investigation of the empiric rules of the behavior of the characteristics of the level. Thereby it is possible to re-examine and to improve existing nuclear theories. It is not possible to do without the investigation of data obtained with the help of target nuclei with odd atomic weight (and consequently with two systems of nuclear levels which correspond to the spins $i + 1/2$ and $i - 1/2$) (i denotes the spin of the target nucleus). If for each level system the distribution $W(\xi)d\xi = \exp\{-\xi/D\} d\xi/D$ is valid (where ξ denotes the distance between levels and D the average value of the level), the resulting distribution has the same form with $D = d_1 d_2 / (d_1 + d_2)$. (d_1 and d_2 are the distances between the levels in the corresponding systems).

The experimental data concerning the location of the following levels are used: In¹¹³, In¹¹⁵, Cs¹³³, Tb¹⁵⁹, Ho¹⁶⁵, Tm¹⁶⁹, Hf¹⁷⁷, Hf¹⁷⁹, Ta¹⁸¹, U²³⁵, U²³⁸. For the purpose of increasing the statistical accuracy of the experimental distribution for the levels of each isotope the values $x_i = \xi_i/D$ were computed, following which the distribution of the levels over the x_i was determined for all nuclei enumerated.

Zurn.eksp.i teor.fis, 31, fasc.1, 162-164 (1956) CARD 2 / 2

PA - 1463

The curve which is found corresponds to the above distribution $W(\varepsilon)d\varepsilon$. A comparison of the curve and the histogram indicates the existence of a small relative number of closely adjacent levels. This may be interpreted as a "repulsion" of levels. The interaction between nuclear levels observed here is similar, as regards its physical nature, to the section (crossing) of electron terms in the spectra of diatomic molecules. The interaction of nucleons in the nucleus causes a more equidistant distribution of nuclear levels than would be expected according to L.D.LANDAU and J.A.A.SMORODINSKIJ.

By far the greater part of the experimental data concerning the distances between levels refers to the position of the two level systems with equal symmetry and different spins. When interpreting the experimental data the following two different conditions are possible: a) The interaction of the levels of the two systems is similar to the distribution of the levels in one system. b) The levels of both systems are not in interaction and their reciprocal distribution is determined by the laws of chance. The authors consider condition b) to be the more probable.

INSTITUTION:

Gurevich, I. I.

USSR/Nuclear Physics - Elementary Particles

C-3

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33957

Author : Gurevich, I. I.

Institution : None

Title : On the Impossibility of Explaining the Stability of Hyperons
by their Large Spins

Original

Periodical : Dokl. AN SSSR, 1956, 107, No 1, 41-42

Abstract : It is shown that large values of the spin of the Λ -particle
is incompatible with the long lifetime of the Λ -nuclei. It
is indicated that this result was not due to any concrete as-
sumptions, but follows from the general premises of quantum
mechanics.

Card 1/1

Category : USSR/Nuclear Physics - Elementary Particles

C-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 435

Author : Alpers, V.V., Gurevich, I.I., and Mishakova, A.P.

Title : Observation of Decays of Positive Hyperon and Single-Charge Hyperfragment

Orig Pub : Dokl. AN SSSR, 1956, 108, No 2, 207-209

Abstract : An emulsion chamber, exposed at an altitude of 27 km, detected decay of remaining Σ^+ hyperon, following the scheme $\Sigma^+ \rightarrow p + \pi^0 + Q$. The value of Q obtained was 113 ± 3.8 Mev. The hyperon was formed in a star of the $20 + \ln$ type. The hyperfragment occurred in a $4 + \text{On}$ star and can be explained if a scheme $\Delta^0 T^* \rightarrow p + p + n + \pi^- + Q$ is assumed for the decay. Two protons remained in the emulsion, the π^- -meson left the chamber, and its energy was determined from measurements of the ionization. A value of 40 ± 5.8 Mev was obtained for Q, and value $B_{\Delta^0} = -5.3 \pm 5.6$ Mev was obtained for the binding energy of the Δ^0 particle in the T nucleus.

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Churavich, T. F.

45/2 - error

1258
OBSERVATIONS OF FORMATION AND DECAY OF UN-
STABLE PARTICLES IN THE EMULSION CHAMBER. V. V.

Alpers, I. G. and V. V. Surkov. Doklady Akad.

Nauk S.S.S.R. 106: 411-2 (1954) May 21. (in Russian)

10. V. Alpers et al. (Doklady Akad. Nauk S.S.S.R. 105,

276 (1955)) reported the data obtained during investigations

of the emulsion chamber exposed to cosmic radiation for 6

hours at 25 km elevation in Sept. 1954. Further works re-

vealed two additional π mesons and one Λ^0 particle. Both

particles were found by systematic examination of separate

traces along the axis of the chamber and identified by the

following reaction scheme: $\pi^+ \rightarrow \pi^+ + \pi^- + \pi^0$. The en-

ergy of the particles were determined on Ilford G-5 emul-

sions with a resolution of 1.5%. Observations of the first case

of π meson decay revealed a π^+ meson with characteristic

momentum of $R = 595 \mu$ range. The second π meson

traced from one visible star on its path and could be identi-

fied as the π^+ meson. The third after passing $R = 10500 \mu$

decayed. Determination of the π -meson charge was pre-

ceded by the various signs of π meson at rest. The energy

from π meson decay was estimated as $Q = (71.3 \pm 3.7) \text{ Mev}$

and the mass $M_\pi = (930.3 \pm 7.3) m_e$. The π meson and all

three π -meson traces lay on the same plane within 2°

accuracy. Observations of π -meson traces indicate that it

was formed in a 13 ± 3 type star. None of the beams

could be identified as K mesons or hyperons. In the second

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... with the ...
... The ...
... produced a tri-pronged star. The ...
... was $Q = 37.2 \pm 1.3$ Mev ...
... and agree well with ...

3/3

JANOSY, L.

PHASE I BOOK EXPLOITATION

NOV/1911

International Conference on Cosmic Radiation. Budapest, 1956.
Hungarian Academy of Sciences. Budapest, 1957. 187 p.
200 copies printed.

Sponsoring Agency: Magyar Tudományos Akademia

Mrs. E. Fejves, and A. Somogyi

PURPOSE: This report is intended for geophysicists concerned with cosmic radiation.

COVERAGE: This report contains the six plenary sessions of the conference. Some of the plenary sessions deal with include nuclear emulsions, extensive air showers, and the program of cosmic ray measurements planned for the International Geophysical Year. Most of the reports are followed by references. Soviet scientists in the field of cosmic radiation who attended the conference are: E.L. Andronikashvili, E. K. Kobrin, I.I. Kuvshinov, S.I. Nikol'skiy and S.M. Vernov. The articles are written in English, German and Russian without parallel translations.

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International Conference (Cont.)

NOV/1911

3. Zavadski, A. The Density Spectrum of Extensive Air Showers 96
4. Chaploupka, P. A Few Remarks on the Geomagnetic Effect of Extensive Air Showers 110

FOURTH SESSION

EMULSIONS

1. Janosy, L. On the Determination of the Energy of a Particle from its Track in an Emulsion 113
2. Alper, S.; Auslander, C.; Bercea, and Z.M. Friedman. On Mass Estimation of Singly Charged Particles in Emulsions by Scattering Measurements 127
3. Gurevich, I.I. Study of Elementary Processes of Nuclear Interaction by Photo Emulsion Method (not incl)
4. Kisevich, M. O. Stanislav and M. V. Investigation of an Electromagnetic Cascade of Very High Energy in the First Stage of its Development 128

Card 4/6

GUREVICH, I.I., LUYCHEN, M.I.

USSR Academy of Sciences, Moscow

"Repulsion of Nuclear Levels," Nuclear Physics, Vol 2, No. 5, Jan 1957, 6, 575
(No. Holland Publ. Co., Amsterdam)

Abst: The size distribution of level spacings in the region of compound nucleus excitation energies of the order of the neutron binding energy is considered. By analyzing available data derived by neutron spectroscopy, it is shown that the actual size distribution of level spacings qualitatively differs from random distribution. The relative number of near-lying levels is considerably smaller than for a random distribution. The conclusion is drawn that nuclear levels "repel" each other with a distribution approaching equidistance. This conclusion is based on experimental data relating mainly to odd-mass target nuclei. Assuming naturally that only equal spin levels interact, the observed "repulsion" may prove to be less pronounced owing to overlapping of the two sets of levels.

GUREVICH, I I

3978

PRODUCTION OF SLOW π^+ MESONS IN THIN ALUMINUM

EMULSION NUCLEI BY 450 MEV DEUTERON BEAMS

10 MEV PER NUCLEON

Author: I. I. Gurevich, L. P. Vukobratovic, S. I. Gurevich

Submitted: 1964

Received: 1964

Prof

GUREVICH, I.I.

PA - 2046

AUTHOR:

AL'PERS, V.V., GUREVIC, I.I., KUTUKOVA, V.M., MISAKOVA, A.P.
NIKOL'SKIJ, B.A., SURKOVA, L.V.

TITLE:

The Study of Explosion Showers produced by High Energy
Cosmic Particles (Russian).

PERIODICAL:

Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 1, pp 33-36
(U.S.S.R.)

Reviewed: 3 / 1957

Received: 2 / 1957

ABSTRACT:

The present work deals with the preliminary results obtained by studying 29 showers by the method of the emulsion chamber. The emulsion chamber consisted of 100 layers of 10 cm diameter and 450 μ thickness. This emulsion chamber was irradiated in May 1955 for 7 hours at a height of 27 km. On the occasion of the microscopic investigation of these emulsions the explosion showers were fixed with more than 5 relativistic traces which are in a sufficiently narrow cone. Furthermore, the rays were fixed with more than 3 relativistic traces. On the occasion of the examination of 26,5 cm³ photoemulsion 27 explosion showers and 29 rays were found. In the course of a further investigation of the rays through the emulsion chamber it was found that two of them originated from stars. The remaining 27 rays were found to be electron-photon showers. On the occasion of the microscopic investigation of the explosion showers the primary particle which excites the shower, the

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The Study of Explosion Showers produced by High Energy Cosmic Particles (Russian).

number of relativistic particles in the shower, and the angular distribution of the shower particles relative to the shower axis were determined. Further, the angle Ω between the symmetry axis of the shower and the direction of the particle producing the shower were determined. Experimental results are shown in a table. A diagram illustrates the dependence of the number of relativistic traces in the shower on the angle $\theta_{1/2}$, which encloses half of the shower particles. In the diagram the showers caused by heavy particles form a special domain and are characterized by a considerably larger number n_s of shower particles.

If it is assumed that the observed showers are produced by nucleon-nucleon showers, it may be expected that the angular distributions of the shower particles in the center of mass system of the two colliding particles are symmetric with respect to "center of mass angles" $\theta_{Sp} = \pi/2$. Next, the formulae for transition to the center of mass system, which

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The Study of Explosion Showers produced by High Energy
Cosmic Particles (Russian).

are obtained on this occasion, are explicitly given for the
case of ultrarelativistic shower particles. By assuming a
nucleon-nucleon production mechanism of the shower we find

$n_3 = k \sqrt{\text{ctg } \theta} \cdot 1/2$. Some showers satisfy this relation and
can thus be assigned to nucleon-nucleon interaction. However,
the angular distributions of the shower particles contradict
this conclusion, for a noticeable asymmetry of angular dis-
tribution was found. All showers produced by nucleons and
 α -particles have a marked asymmetry with respect to the
angle $\theta = \pi/2$.

ASSOCIATION: Not given

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 3/3

GUREVICH, I.I.; MISHAKOVA, A.P.; NIKOL'SKIY, B.A.; SURKOVA, L.V.

Explosion showers produced by high energy cosmic ray particles. Zhur.
eksp. i teor. fiz. 34 no.2:265-280 ♣ '58. (MIRA 11:4)

1. Akademiya nauk SSSR.
(Cosmic rays)

AUTHORS: Gurevich, I. I., Kutukova, V. M., Mishakova, 56-2-2/51
A. P., Nikol'skiy, B. A., Surkova, L. V.

TITLE: The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$
Decay Electrons Observed in Photographic Emulsions
(Asimmetriya uglovogo raspredeleniya elektronov $\mu^+ \rightarrow e^+$ -
-raspada po nablyudeniym v fotoemul'sii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958,
Vol 34, Nr 2, pp 280-285 (USSR)

ABSTRACT: An emulsion chamber of 7 x 4 x 1 cm consisting of 23
layers of an HMKO photographic emulsion from the P type
was irradiated with slow positive pions of the OM9.1
(Ob'yedinennyy institut yadernykh issledovaniy - United
Institute for Nuclear Research) synchrocyclotron. The chamber
was mounted in a double magnetic screen in order to make
sure that the scattered magnetic field of the synchrotron
did not lead to a precession of the spin of the myon. In
looking through the emulsions after developing those cases
were selected where the whole myon track of the $\pi \rightarrow \mu$ -decay
is situated in a single layer of the emulsion. In this the

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The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay
Electrons Observed in Photographic Emulsions

56-2-2/51

myon is supposed to come to a standstill after the passage through at least 50μ of the surface of the non-developed layer of emulsion. The authors determined the angle α between the direction of emission of the myon in the $\pi \rightarrow \mu$ -decay and that of the electron of the $\mu \rightarrow e$ -decay by determining the angle α between these directions on the emulsion level and the angle of distribution β_1, β_2 resp. of the traces of the myon, the electron towards the level of emulsion resp.. Furthermore an emulsion chamber of the same dimensions was irradiated with slow positive pions. The results of measurements are collected in a table. The angular distributions determined this way are shown by a diagram; they do not contradict the theoretical dependence $1 + a \cos\theta$, $a = (\lambda/3)(1 - \gamma)$, where γ denotes the depolarization coefficient of myons. A relation for the determination of the optimum value of a is given. The magnetic field ($H \sim 1100$ G) increases a little the asymmetry, i.e. it decreases the depolarization of the myons in the emulsion. But this effect is not regarded as strictly proved. The mean value of the parameter a calculated from the results of this work is $a = -(0,108 \pm 0,0094)$. The angular distribution for 13770μ

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The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay 56-2-2/51
Electrons Observed in Photographic Emulsions

→ decay processes proceeding from the results of various previous works and from those of the present investigation is also shown in a diagram. Within the error limits the angular distribution of the electrons of the relation $1 + a \cos^2 \theta$ is sufficient, where $a = -(0,111 \pm 0,015)$. There are 2 figures, 2 tables, and 13 references, 1 of which is Slavic.

ASSOCIATION: **AS** USSR (Akademiya nauk SSSR)

SUBMITTED: August 14, 1957

AVAILABLE: Library of Congress

1. Photographic emulsions-Irradiation 2. Electrons-Distribution

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GUREVICH, I. I.

"ELECTRON-PHOTON CASCADES WITH ENERGIES FROM 10^{11} TO 10^{13} ev IN NUCLEAR EMULSIONS"

A. S. Romantseva, A. A. Varfolomeyev, R. I. Gerasimova, I. I. Gurevich, L. A. Makaryina, S. A. Chuyeva

Fifteen electron-photon cascades with energies from 10^{11} to 10^{13} ev, recorded in six emulsion stacks with a total volume of 10 l, have been investigated.

The energies of the primary photons evoking the cascades were determined by the energy spectrum of the cascade electrons at a depth of 2.5 ± 3 to $(t_0 - \text{rad. unit})$.

The grain density and the gap density were measured for the first pairs. In all the pairs with energies 3×10^{11} ev, a decrease in grain density at the apex caused by the screening effect was discovered.

The following experimental relation of the ionization losses of pair (1) was obtained:

Where I_{peris} is the specific ionization electron loss at the ionization plateau, x is the distance from the apex of the pair in cm, and E is the energy of the photon which produced the pair.

The expression obtained for $I/2I_{\text{pe}}$ may be used to determine the E energy from experimental values for I . An estimation of the E error is given, taking into consideration the screening effect.

The number of electron-position pairs produced at depths of $1.0t_0$ and $1.5t_0$ was measured.

GUPEVICH, I.I. (CONTINUED)

The results agree with the calculated data obtained by the Monte method, taking into consideration the effect of the medium of Bremstrahlung (Laudau-Pomeranchuk and Ter-Mikaelyn effects).

report presented at the International Cosmic Ray Conference, Moscow 6-11 July 1959

For 10 cascades with $E 1.8 \times 10^{11}$ ev, the probability of $p(\gamma)^2$ from the criterion / 2, is 2.5 % when compared with the curves which do not consider the effect of the medium, and 80-95% when compared with the calculations that take into consideration the effect of the medium on the Bremsstrahlung.

24(3), 21(7)

SOV/56-36-4-65/70

AUTHORS:

Ali-Zade, S. A., Gurevich, I. I., Dobretsov, Yu. P.,
Nikol'skiy, B. A., Surkova, L. V.

TITLE:

The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$ -Decay
in a Magnetic Field of 27000 G (Asimmetriya uglovogo raspredeleniya
elektronov $\mu^+ \rightarrow e^+$ -raspada v magnitnom pole 27000 G)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36,
Nr 4, pp 1327-1329 (USSR)

ABSTRACT:

If angular distribution is described by the expression
 $4\pi dN/d\Omega = 1 - a \cos\theta$ ($a = \lambda P/3 = a_0 P$; $\lambda = 3a_0 = -\cos(V, A)$ char-
acterizes the ratio of the vectorial and pseudovectorial share
of interaction in $\mu^+ \rightarrow e^+$ -decay; P denotes muon polarization), it
is found that the quantity a depends both on the measuring meth-
od and on the nature of the depolarized matter. It attains a
maximum value of $a = 1/3$ at $\cos(A, V) = -1$. For NIKFI-R emulsions
 a was determined as amounting to 0.092 ± 0.018 , for Ilford G-5
it was 0.14. The maximum value attained by a for graphite is
 0.303 ± 0.048 . The depolarizing property of matter may be reduced
by applying strong magnetic fields, the direction of which co-
incides with muon polarization. The increase of a brought about

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SOV/56-36-4-65/70
The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$ -Decay in a Magnetic Field of 27000 G

by magnetic field can be described by $a = a_0 \left[1 - \frac{0.5}{1 + (\mu H / \Delta E)^2} \right]$;

a_0 denotes the a-value if no depolarization takes place, ΔE - the energy of fine-structure splitting of the μ -mesic atom in the 1S -state. An experimental checking of this formula in fields of up to 14000 G showed that by it the dependence $a(H)$ is qualitatively described. The authors determined a in the $\pi \rightarrow \mu \rightarrow e$ -decay in photoemulsions at $H = 27000$ G. a was determined from the ratio $a = 2(N_{\text{backward}} - N_{\text{forward}}) / (N_{\text{backward}} + N_{\text{forward}})$. Results:

For $\theta = 0 - 30^\circ$ $a_1 = 0.315 \pm 0.026$

$\theta = 150 - 180^\circ$ $a_2 = 0.295 \pm 0.027$.

Mean value formation averaged over the directions in which muons fly off gives: $a_3 = 0.305 \pm 0.019$. If $a_{\text{real}} = a_3 / \cos \theta$, one obtains $a_{\text{real}} = a_3 / 0.940 = 0.324 \pm 0.020$. Herefrom it follows that $|\lambda|P = 0.972 \pm 0.06$, i.e. $|\lambda|$ with an accuracy of up to a

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The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$ -Decay in a Magnetic Field of 27000 G SOV/56-36-4-65/70

statistical error of $\pm 6\%$ attains its maximum value and $P \approx 1$. This indicates a considerable degree of inaccuracy of the formula describing $a(H)$. The authors finally thank B. S. Neganov and B. V. Sokolov for their help in irradiating the photoemulsions, D. M. Samoylovich for developing the emulsion, and further also V. M. Kutukova, A. M. Alpers, and G. V. Pleshivtseva for their assistance. There are 8 references, 2 of which are Soviet.

SUBMITTED: February 1, 1959

Card 3/3

24 (7)

AUTHORS: Gurevich, I. I., Nikol'skiy, B. A.
Surkova, L. V.

SOV/56-37-1-58/64

TITLE: Three-Electron Decay of the μ -Meson (Trekhelektronnyy raspad μ -mezona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 318 - 319 (USSR)

ABSTRACT: The authors of the present "Letter to the Editor", when investigating the asymmetry of the angular electron distribution of $\pi \rightarrow \mu \rightarrow e$ -decay, observed that in one case three relativistic electrons depart from the stopping point of the μ -meson (cf. figure). All three electrons have large inclination angles with respect to the emulsion plane, and therefore exact measurement of grain density was impossible; it was, however, near that for relativistic particles (energy ~ 1 Mev). The recorded part of the electron path length: $L_{e1} = 455 \mu$, $L_{e2} = 562 \mu$, $L_{e3} = 455 \mu$.

The muon range amounts to $R_{\mu} = 598 \mu$ in the case of an average path length of the muon of the $\pi \rightarrow \mu$ -decay in a R-NIKFI-emulsion of 602 μ . The angles between the electrons: $\theta_{12} = 8.6^{\circ}$, $\theta_{13} =$

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Three-Electron Decay of the μ -Meson

SOV/56-37-1-58/64

$\theta_{23} = 10.6^\circ$, $\theta_{23} = 10.5^\circ$. The case observed cannot be interpreted as a muon decay in electron + γ with a transformation of the quantum into electron + positron at the place of decay, because in this case the direction of the departure of the particle pairs would have had to be opposite to the observed direction of flight of the decay electrons. The explanations $\mu^+ \rightarrow e^+ + e^+ + e^- + \nu + \bar{\nu}$ or $\mu^+ \rightarrow e^+ + \nu + \bar{\nu} + \gamma$ with following transformation of the quantum into a pair would be possible. The case described here was observed in connection with the evaluation of about 50,000 muon decays. Thus, the "three-electron" decay probability of the muon may be estimated at $p(3e)/p(e) \leq 2 \cdot 10^{-5}$. If the results obtained by other authors are taken into account, a probability of 10^{-6} is obtained. This order of magnitude is obtained also if a radiation process of second order is assumed; emission of a virtual γ -quantum accompanying the departure of the electron with following transformation into an electron-positron pair, the pair energy of which may be estimated as amount-

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Three-Electron Decay of the μ -Meson

SOV/56-37-1-58/64

ing to 15 Mev. The authors finally thank I. S. Shapiro for discussions. There is 1 figure.

SUBMITTED: April 17, 1959

Card 3/3

GUREVICH, I.I.; POMERANCHUK, I.Ya.

[Theory of resonance absorption in heterogeneous systems] Teoriia
rezonansnogo pogloshcheniia v geterogennykh sistemakh. Moskva,
1955. 18 p. (MIRA 14:6)
(Nuclear resonance and relaxation)

31541
S/627/60/002/000/024/027
D299/D304

3.24/0 (1805, 2705, 2805)

AUTHORS: Varfolomeyev, A. A., Gerasimova, R. I., Gurevich, I. I.,
Makar'ina, L. A., Romantseva, A. S., and Chuyeva, S. A.

TITLE: Electron-photon showers with energies of 11^{11} - 10^{13} ev.
in nuclear emulsions

SOURCE: International Conference on Cosmic Radiation. Moscow,
1959. Trudy. v. 2. Shirokiye atmosferynye livni i kas-
kadnyye protsessy, 299-306

TEXT: A detailed investigation was carried out of 15 electron-photon showers with energies $>10^{11}$ ev., at low depths. In contradistinction to other works, the results are compared with those obtained for cascades by the Monte Carlo method. Six emulsion stacks were used, with total volume of about 10 liters. In 5 of the stacks of emulsion Р-НИКФМ (R-NIKFI), the grain density of relativistic electrons was 30 - 35 grains per 100 μ . The energy E_γ of primary quanta which generate the shower, was determined from the

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Electron-photon showers ...

number of cascade electrons of energy higher than $\mathcal{E}_c = 300$ Mev, at a depth of $2.5 - 3.0 t_0$. A table lists (for comparison) the values of E_f , obtained by the Monte Carlo method and by formula

$$R = \frac{1}{16,1} \left\{ 45,0 + \ln \left[\left(\frac{2x}{E} \right)^2 (1 + 140 x) \right] \right\} \quad (1)$$

where x is the distance from the pair vertex in cm; this formula is semiempirical and represents the ratio of ionization losses of pairs to those of relativistic electrons; the ionization losses are due to mutual shielding of electron and positron fields. In the experiments, particular care was taken to detect the vertices of the electron-positron pairs, formed at depths $\leq 1.5 t_0$. After determining the lateral shower distribution, the energy of the electrons of the pairs was measured by means of multiple scattering (to an accu-

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S/627/60/002/000/024/027

D299/D304

Electron-photon showers ...

racy of 20 - 30%) for energies of up to $(5-7) \cdot 10^8$ ev. The total number of pairs formed at depths $\leq 1.0 t_0$ and $\leq 1.5 t_0$ with energies higher than (1-2) Mev, is plotted in two figures, from which it is evident that the experimental points fit better the curve which takes into consideration the influence of the medium on the bremsstrahlung (the curve obtained by Migdal's formula); the curve obtained by Bethe-Heitler's formula does not fit the experimental results. The figures also show that not one of the 15 showers under consideration is anomalous. Apparently, the majority of so-called "anomalous" showers, described in literature, can be explained by statistical fluctuations in the cascades or by improper determination of the energy of primary electron-positron pairs. Another figure exhibits the experimental curves of longitudinal shower development; here, too, no appreciable deviations from the corresponding theoretical curves are observed. A table lists data on the number of pairs formed at small distances $r < 0.5 \mu$ from the nearest electron track; these data might be useful in analyzing the cross-section for pair formation by high-energy electrons. There are 4

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Electron-photon showers ...

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S/627/60/002/000/024/027
D299/D304

figures, 3 tables and 21 references: 10 Soviet-bloc and 11 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: K. Pinkau. Nuovo Cim., 3, 1285, 1956; H. Fay. Nuovo Cim., 5, 293, 1957; J. Iwadare. Phil. Mag., 3, 680, 1958; S. K. Srivivasan, J. S. Butcher, B. A. Chartres, H. Messel. Nuovo Cim., 9, 77, 1958. +

Card 4/4

GUREVICH, I.I.; YAREMENKO, A.I.

"Heavily loaded hydrogen diffusion electrodes operating at low pressure and at the temperature of the surrounding medium" by E. Justi and others. Reviewed by I.I. Gurevich, A.I. Yaremenko. Inzh.-fiz. zhurn. no.9:138-141 S '60. (MIRA 13:9)

(Electrodes) (Hydrogen)
(Justi, E.) (Pilkun, M.) (Scheibe, W.) (Winsel, A.)

VARFOLOMEYEV, A.A.; GERASIMOVA, R.I.; GUREVICH, I.I.; MAKAR'INA, L.A.;
ROMANTSEVA, A.S.; CHUYEVA, S.A.

Effect of the density of the medium on bremsstrahlung in electron-
photon showers involving energies from 10^{11} to 10^{13} ev. Zhur.
eksp. i teor. fiz. 38 no.1:33-45 Jan '60. (MIRA 14:9)
(Bremsstrahlung) (Cosmic rays)

GUREVICH, I.I.

"Kinematics of nuclear reactions" by A.M.Baldin, V.I.Gol'danskii,
I.L.Rozental'. Reviewed by I.I.Gurevich. Usp. fiz. nauk 77
no.2:323-324 0 '60. (MIRA 16:8)
(Nuclear reactions) (Baldin, A.M.) (Gol'danskii, V.I.)
(Rozental', I.L.)

S/056/61/040/002/009/047
B113/B214

AUTHORS: Ali-Zade, S. A., Gurevich, I. I., Nikol'skiy, B. A.
TITLE: Asymmetry of the angular distribution of electrons of μ -e decay in magnetic fields of strengths up to 35,000 oe
PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 452-456

TEXT: Taking into account the multiple exchange of electrons in muonium production, the mechanism of muon depolarization has been studied in earlier papers and the equation $a^* = a [1 - 0.5/(1+x^2 + \tau^{-2})]^n$ (3) obtained. Here, n denotes the number of exchanges with electrons, τ the mean lifetime of a muonium atom in the units $\hbar/\Delta E = 3.58 \cdot 10^{-11}$ sec, $a^* = P a$, where P is the degree of residual polarization of the muon on stopping in the moderator, and a is the asymmetry parameter. The present paper is concerned with the investigation of the asymmetry of angular distribution of electrons of μ -e decay in magnetic fields up to 35,000 oe, and with the explanation of the function $a^*(H)$ in a wide range of H . For carrying out

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Asymmetry of the angular...

S/056/61/040/002/009/047
B113/B214

the experiment, the photoemulsion chambers were bombarded with slow π^+ mesons so that the muons were stopped in the chamber. From the events of π - μ -e decay such were selected, in which the direction of emission of the muon formed angles of $\beta = 0-30^\circ$ and $\beta = 180-150^\circ$ with the direction of the magnetic field. Only those events of π - μ decay were considered, in which the muon range was greater than or equal to $\Delta = 15\mu$ measured from the surface of the emulsion. In all, a total of 177,850 events of π - μ -e decay were recorded in accordance with these selection rules. The angle between the direction of emission of the electron and the direction of the magnetic field was projected onto the surface of the emulsion and the projected angle measured. The value of the coefficient a^* was determined from the equation: $a_3 = 2[N(\alpha > 90^\circ) - N(\alpha < 90^\circ)] / [N(\alpha > 90^\circ) + N(\alpha < 90^\circ)]$ (4). The corrected value of a^* was obtained from the equation $a^* = a_3 / \cos \beta$ (5). No abnormal muon decays were found in the π - μ -e decay. Table 1 gives the values of a^* obtained from Eq. (4) and (5) for emulsions with normal gelatin content. The values of a^* are given also for the muons in the direction (\uparrow) ($\beta < 30^\circ$) and in the direction (\downarrow) ($\beta > 150^\circ$) of the magnetic field. δa^* denote the standard

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Asymmetry of the angular...

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B113/B214

errors ($\delta a = 2/\sqrt{N}$). The values obtained for higher gelatin content are: $a^*(1) = 0.297 \pm 0.013$ and $a^*(L) = 0.305 \pm 0.013$. The following conclusions are drawn from the data obtained here: 1) When muons are slowed down in a medium situated in a longitudinal magnetic field having a strength of 20,000 ÷ 30,000 oe, a^* does not reach the maximum theoretical value of 1/3. 2) a^* increases with increasing strength of the field from 10,000 to 35,000 oe even on diluting the emulsion. This result is, however, statistically not so reliable as the first. With the data obtained it is possible to check the correctness of the function $a^*(H)$. A comparison of the theoretical and experimental functions shows that in Eq. (3) the function $P_{\text{exp}}(x)$ is not adequately taken into account.

V. P. Dzhelepov is thanked for according the possibility of bombarding the photoemulsions on the synchrocyclotron of OIYaI, D. M. Samoylovich for developing the photoemulsions, and W. M. Kutukov, A. M. Alpers, G. V. Pleshivtsev, S. A. Chuyev, B. V. Sokolov, and L. V. Surkov for assistance. There are 1 figure, 2 tables, and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc.

SUBMITTED: August 24, 1960

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28931

S/056/61/041/004/015/019

B111/B112

26.2245

AUTHORS: Gurevich, I. I., Nemirovskiy, P. E.

TITLE: "Metallic" reflection of neutrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 4, 1961, 1175 - 1177

TEXT: There are various types of neutron mirrors, all of which use metallic neutron reflection from strongly absorbing media. In general, it is assumed that the reflecting medium absorbs weakly and that the neutron wave number is real. The imaginary part cannot be neglected in strongly absorbing media ($k = k_1 + ik_2$). If the medium is hit by a neutron current having the wave number k_0 one obtains: $k^2 = k_0^2 + (\hbar/2m)U$, where U is the potential in the medium, i.e., $k^2 = k_0^2 + \alpha + ik_1 \rho \bar{\sigma}_c$, where $\alpha = \rho [4\pi \bar{\sigma}_s - (k_1 \bar{\sigma}_c)^2]^{1/2}$. $\bar{\sigma}_s$ is the total scattering cross section, $\bar{\sigma}_c$ is the total absorption cross section, and ρ is the number of nuclei per cm^3 . For a very small energy one obtains $k_1 = k_2 = \rho \bar{\sigma}_c / 2$; the

X

"Metallic" reflection of neutrons

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S/056/61/041/004/015/019
B111/B112

index of refraction, n , is given by $n = \frac{\rho \bar{\sigma}_c}{k_0} (1 + i)$. For $|n| \gg 1$ the reflection coefficient R is given by: $R = 1 - \frac{4k_0}{\rho \bar{\sigma}_c} \cos \vartheta$, where ϑ is the angle with the normal. If the potential scattering cannot be neglected, R is given by: $R = 1 - 4k_1 k_0 \cos \vartheta / (k_1^2 + k_2^2)$. For $k_0 \rightarrow 0$ one obtains $k_1^2 = (\rho a)^2 / 4k_1^2 + \alpha$. For neutrons whose energy is zero in a vacuum, the maximum absorption cross section is $\sigma_{c \max} = a \left[\frac{1}{2}(\rho^2 a^2 + \alpha^2)^{1/2} - \frac{1}{2}\alpha \right]^{-1/2}$. If $\alpha \ll \rho a$, then the following expressions are valid: $\sigma_{c \max} = \sqrt{\frac{2a}{\rho}}$ and $R = 1 - 4k_0 (2a \rho)^{-1/2} \cos \vartheta$. From Gd¹⁵⁷ the authors conclude that metallic neutron reflection is less effective for the production of neutron mirrors than other methods. It is noted that natural vibrations of the atoms will not change the two last-mentioned formulas, since the Doppler effect does not influence cross sections satisfying the $1/v$ law. There are 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: M. Goldberger, F. Seitz, Phys. Rev., 71, Card 2/3

"Metallic" reflection of neutrons

294, 1947.

SUBMITTED: April 22, 1961

28931

S/056/61/041/004/015/019

B111/B112

Card 3/3

X

GUREVICH, I. I. and NIKOLSKIY, B. A.

"Angular distribution of $\pi^+ \mu^- \rightarrow e$ electrons."

report presented at Intl. Conference on High Energy Physics, Geneva,
4-11 July 1962

GUREVICH, I. I.

"The Coherent Effects in Bremsstrahlung of Ultra-Relativistic"

report presented at the Intl Conference on High Energy Physics, Geneva,
4-11 July 1962

GUREVICH, I.I.; NEMIROVSKIY, P.E.

"Metallic" reflection of neutrons. Zhur.eksp.i teor.fiz. 41
no.4:1175-1177 0 '61. (MIRA 14:10)
(Neutrons---Capture)

24.6700

S/056/62/043/002/049/053
B108/B102

AUTHORS: Gurevich, I. I., Nikolskiy, B. A.

TITLE: Angular distribution of decay electrons from $\pi^+ \rightarrow \mu^+ \rightarrow e^+$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 2(8), 1962, 724-725

TEXT: The theory of V-A interaction predicts an angular distribution of electrons from a $\pi \rightarrow \mu \rightarrow e$ decay event of the form $dN/d\Omega \sim (1 - a \cos \theta)$. This law was checked on by experiments (photoemulsion). The experimental results showed that the above law with $a = 0.270 \pm 0.006$ is a good rendering of what actually happens. There is 1 figure. JA

ASSOCIATION: Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences USSR)

SUBMITTED: May 17, 1962

Card 1/1

L1686

S/823/62/000/000/002/007
B125/B102

272400
24610
AUTHOR:

Gurevich, I. I.

TITLE:

Elementary investigation of the influence exerted by the density of a medium on bremsstrahlung

SOURCE:

Nekotoryye voprosy fiziki elementarnykh chastits i atomnogo yadra. Ed. by V. D. Mikhaylov and I. I. Rozental'. Mosk. inzh.-fiz. inst. Moscow, Gosatomizdat, 1962, 72-76

TEXT: In essence the attenuation of bremsstrahlung by polarization of the medium and by multiple scattering is of a purely classical nature, so the two effects here interplaying were examined in an elementary way. The energy of the electron is assumed to be much greater than its mass. A constructive interference of elementary waves is said to occur over a "coherent distance" which is $l_0 \approx E^2/\omega m^2$ in vacuo when the phase difference of elementary waves emitted during a time t is $\Delta\varphi = (1-v)t/\lambda - 1/2$. The coherent distance in a medium is

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S/823/62/000/000/002/007
B125/B102

Elementary investigation of the...

$$I \cong \frac{I_0}{1 + \left(\frac{E}{m}\right)^2 \frac{\omega_0^2}{\omega^2} + \left(\frac{E_s}{m}\right)^2 \cdot \frac{I}{L}} \quad (6),$$

where E is the electron energy, L is the radiation length, ω_0 and ω are the photon frequencies in vacuo and in the medium, respectively, and $E_s = (4\pi \cdot 137)^{1/2} \cdot m \approx 21$ Mev. From the formulas for the attenuation factor $q = 1/l_0$ of bremsstrahlung due to these effects,

$$q(E, \omega) = \frac{dI}{dI_0} = \frac{I}{I_0}, \quad (7)$$

and

$$q(E, \omega) = \frac{1}{1 + \left(\frac{E}{m}\right)^2 \frac{\omega_0^2}{\omega^2} + \left(\frac{EE_s}{m^2}\right)^2 \frac{q}{L\omega}} \quad (8),$$

it follows that $q \approx q_s = m_s^2 \sqrt{L\omega}/EE_s$ when $1 + \left(\frac{E}{m}\right)^2 \frac{\omega_0^2}{\omega^2} \ll \left(\frac{EE_s}{m^2}\right)^2 \frac{q}{L\omega} \quad (8b).$

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ACCESSION NR: AP4017154

S/0053/64/082/002/0177/0199

AUTHORS: Gurevich, I. I.; Nikol'skiy, B. A.

TITLE: Neutral K mesons

SOURCE: Uspekhi fizicheskikh nauk, v. 82, no. 2, 1964, 177-199

TOPIC TAGS: kaon, K meson, neutral K meson, antikaon, kaon mass difference, kaon lifetime, kaon lepton decay, kaon isotopic properties, charge invariance, strangeness conservation, coherent K_1^0 meson generation, incoherent K_1^0 meson generation

ABSTRACT: This is a brief summary of the most recent literature. Some of the unusual properties that differentiate neutral kaons from genuinely neutral particles are reviewed, particularly with respect to charge invariance. The properties of the two different neutral kaons K_1^0 and K_2^0 are reviewed and recent experimental data are report-

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ACCESSION NR: AP4017154

ed on the differences in their lifetimes and masses. Coherent and incoherent generation of K_1^0 mesons by passage of a K_2^0 beam through matter, and a related method of determining the mass difference between the two, are discussed. Experiments proposed to establish the sign of the mass difference are described. Other neutral kaon properties are also reviewed. The section headings are: 1. Two types of neutral K mesons. 2. Lifetimes of K_1^0 and K_2^0 mesons. 3. Mass difference of K_1^0 and K_2^0 mesons. 4. Generation of K_1^0 mesons in K_2^0 beam. 5. Which is heavier, K_1^0 or K_2^0 ? 6. Wave properties of systems of neutral kaons. 7. Lepton decays of neutral K mesons. The $\Delta S = \Delta Q$ rule. 8. Isotopic properties of neutral K mesons. Orig. art. has: 2 figures, 30 formulas, and 2 tables.

ASSOCIATION: None

Card 2/3

GUREVICH, I.I., inzh.; SATANOVSKIY, R.L., inzh.

Overall mechanization and automation of production processes in
manufacturing standard parts of instruments. Mekh. i avtom.proizv.
19 no.1:4-6 Ja '65. (MIRA 18:3)

L 8202-66 JXT(C2)

ACC NRI AT5022299

SOURCE CODE: UR/3136/64/000/620/0001/C011

AUTHOR: Gurevich, I. I.; Makar'ina, L. A.; Nikol'skiy, B. A.; Sokolov, B. V.;
Surkova, L. V.; Khakimov, S. Kh.; Shestakov, V. D.; Dobretsov, Yu. P.; Akhmanov, V. V.

ORG: [Gurevich, Makar'ina, Nikol'skiy, Sokolov, Surkova, Khakimov, Shestakov] IAE;
[Dobretsov] MIFI; [Akhmanov] LYaP OIYaI

TITLE: Asymmetry of the angular distribution of electrons in the decay $\pi^+ \rightarrow \mu^+ + e^+$
in a magnetic field of 140,000 gauss

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-620, 1964, Asimmetriya uglo-
vogo raspredeleniya elektronov pi plus \rightarrow mu plus \rightarrow e plus raspada v magnitnom pole
napryazhennost'yu 140 000 gauss, 1-11

TOPIC TAGS: mu meson, pi meson, positron, bubble chamber, radioactive decay

ABSTRACT: The universal V-A coupling theory applied to the determination of the an-
gular distribution of electrons in the reaction $\pi^+ \rightarrow \mu^+ + e^+$ is given by

$$\frac{dN}{d\theta} \sim 1 - \alpha \cos \theta_e$$

in terms of the parameter α . In order to obtain a value of α which depends on the
polarization state of the meson, an experiment was performed showing the effect coun-
tering the depolarization of the dense medium through which the meson is moving.

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L 8202-66

ACC NR: AT5022299

Critical magnetic fields needed to oppose the depolarizing effect, which in turn allows more accurate determination of the parameter α , were found. Only 8800 gauss were required in the hydrogen bubble chamber to counter the effect of hydrogen depolarization. However, the scatter in the value is quite large. The photographic emulsion yielded much smaller scatter but required an application of a very large magnetic field of 140,000 gauss. The value of α found in the experiment is $0.325 \pm .010$ (as compared to the theoretical value of 0.333). This value was obtained by analyzing over 66,000 events. A brief discussion is given of the effect of the magnetic field on the motion of the electron. It is shown that the electron direction must be measured with respect to the magnetic field direction after setting certain constraints on the selection of the angular range. Orig. art. has: 3 figures, 1 table, 5 formulas.

SUB CODE: 18/

SUBM DATE: 00/

ORIG REF: 005/

OTH REF: 007

nw

Card 2/2

GUREVICH, Isay Isidorovich; TARASOV, Lev Vasil'yevich; KOZLOV,
V.D., red.

[Physics of low-energy neutrons] Fizika neytronov niz-
kikh energii. Moskva, Nauka, 1965. 607 p.
(MIRA 19:1)

CA

2

Production of high-viscosity cylinder distillates and road bitumens by distillation of tar in mixture with gasoline. I. L. Gurevich. *Trudy Moskov. Neftey. Inst. im. I. M. Gubkina* 1948, 141-4. Petrokum asphalt (b.p. 0.0728, K_m 7.68) from a heavy oil was mixed in ratio 3:1 with a gasoline fraction (b. 45-133°, d_4 0.7311) and distd. in a tubular still at 340-360° and 71 mm. Bitumens of the first 3 qualities, with good tenacity and high d. and η were obtained. Production of road bitumens from cracking residues of two-coil cracking. I. L. Gurevich and O. D. Khavkina. *Ibid.* 144-62. Bitumens were produced from two-coil cracking residues by 4 methods: (1) vacuum distn., (2) steam-vacuum distn., (3) direct oxidation at 160-200°, air input 2.4-3 l./min., for 4-44 hrs., and (4) continuous oxidation through a series of 3 vertical stills of a concentrate of products of (1) and (2). Method (1) yielded grade 2 and 3 bitumens of good tenacity, (2) gave grade 3 bitumen and (3) gave grade 2 and 3 bitumens of low tenacity. Method (3) was varied by mixing the tar from (1) with cracking residue. Grades 2 and 3 bitumens of low tenacity were obtained. Method (4) yielded grade 4 and 5 bitumens. Nancy Corbin

CB

22

Continuous production of ceresin and petrolatum from
osocerite without sulfuric acid. I. L. Gurevich, *Trudy
Akadem. Naftyan. Inst. im. I. M. Gubkina* 1946, 182-8.
Melted osocerite crude is dissolved in gasoline or ligroin,
the soln. is heated, percolated through activated clay, and
rectified. The tall fractions contain petrolatum and white
ceresin and the residue consists of yellowish ceresin. To
produce only white and yellow ceresins, distn. takes place
first, and all fractions, including residue, are percolated
through activated clay. Yield can be improved by extg.
the osocerite ore with gasoline or ligroin instead of boiling
water. Nancy Corbin

GUREVICH, I. L.

"Operations and Equipment of Refineries", (Excert), Gostoptekhnizdat 1952.

SO: Petroleum Technology, Part 1, 1952.

GUREVICH, I. L.

PHASE I

BOOK

Call No.: TP690.G766

Author: Gurevich, I.L.

Full Title: OIL TECHNOLOGY; PART I: GENERAL DATA AND PRIMARY DISTILLATION OF OILS

Transliterated Title: Tekhnologiya nefti; Chast' I: Obshchie svoystva i pervichnaya peregonka neftei.

Publishing Data

Originating Agency: None.

Publishing House: State Scientific and Technical Publishing House of Petroelum and Mineral Fuel Literature

Date: 1952.

No. pp.: 423

No. of copies: 6,000

Editorial Staff:

Editor: None.

Tech. Ed.: None.

Ed.-in-Chief: None.

Appraiser: None.

Text Data

Coverage: A textbook on oils and oil products: chemical and physical properties, classification, description of products, oil refining processes and equipment, and primary distillation. The development of the Soviet oil industry is briefly traced. 284 Diagrams.

Purpose: A textbook for students and technicians.

Facilities:

No. Russian and Slavic References: None.

Available: Library of Congress.

Urea dowaxing of a wide naphtha fraction (120-470°) from Yulin (China) (crude oil) I. L. Gurevich, Chien-yun Yeh, and V. K. Shchegoleva. *Russ. J. Appl. Chem.* 1987, 60, 60-61. Urethane naphtha is low in S (0.25%) and high in asphalt (0.7%), and has a wax content of 1.2%. Asphalt-free stock, urea, and C₁₂H₂₂ are mixed in a 100 ml. three-neck flask after 10 min. in nitrogen (air), acetone, dichloroethane, or water is added, stirring is continued for 60-80 min., and the reaction products are removed by filtration. The urea adduct is decomposed by hot water. It was found that (1) water can be used as activator, (2) the type of solvent affects adduct formation only slightly, and (3) the no. of treating steps has only a slight effect on the yield for a given amt. of urea.

6
2

B. Deslins

GURWICH, I. I.

"On the Problem of Petroleum Desulfurization"

Composition and Properties of the High Molecular Weight Fraction of
Petroleum; Collection of Papers, Moscow, Izd-vo AN SSSR, 1956. 370pp. (Inta nefti)
2nd Collection of papers publ. by AU Conference, Jan 56, Moscow.

The author describes the continuous desulfurization of crudes by means of the MNI adsorption method. Variation of the adsorbent - crude ratio controls the sulfur content of the various fractions. The article gives 3 figures. There are no references.

SOV/137-58-10-21282

Transaltion from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 120 (USSR)

AUTHORS: Gurevich, I. L., Dybovskiy, R. K., Kalinin, A. T., Veselov, B. P.

TITLE: Liquid Carburizer for Gas Carburization of Steel (Zhidkiy karb-
yurizator dlya gazovoy tsementatsii stali)

PERIODICAL: Materialy Mezhevuz. nauchn. soveshchaniya po vopr. novoy
tekhn. v nef. prom-sti, 1958, Vol 3, pp 206-223

ABSTRACT: An investigation was conducted on the gas carburization (GC) of specimens of Nr-20 and 18KhGT-grades of steel in a laboratory furnace and in a small type Ts-25 shaft kiln using various liquid carburizers (C); lamp kerosene was used as the standard C. It is indicated that at GC temperatures of 925 - 930°C, a duration of 1.5 hours or 5 hours and at the optimum feeding rate for each C, the employment of alkane C ensures advantages over the use of aromatic C in the total depth of the layer, the magnitudes of the transitional and eutectoid zones, and the degree of carburization of a control wire 1.5 mm in diameter. The best results were obtained using synthol with a boiling-point range of 48 - 246°. When sooty products of decomposition of C are present in the muffle, GC showed that alkane C,

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SOV/137-58-10-21282

Liquid Carburizer for Gas Carburization of Steel

especially synthols with 48 - 246° and 69 - 302° boiling-point ranges, decrease the carburizing capacity less than the aromatic C. The greatest evolution of coke-soot was produced by the aromatic C. Comparative data on GC of machine parts of the DT-54-type tractor of 18KhGT-grade steel in continuous furnaces of the heat-treatment shop of the KhTZ [Khar'kovskiy Traktorny Zavod (Khar'kov Tractor Plant)] showed that compared to the employment of kerosene the increase in the productivity for 100 - 231°, 101 - 305°, and 195 - 312° fractions are by 24, 51, and 40%, respectively, while the decreases in the amount of the coke-soot deposition are by 50, 35, and 41%, respectively. When synthols are used, a loose soot is produced which is easily washed off with the oil in quenching tanks, corrosion produced by the presence of S is prevented, and the consumption of C per operation is decreased. Technical specifications (TU 574 - 55) are developed for two types of C: synthol 100 - 300° for continuous furnaces and synthol 100 - 230° for shaft kilns.

1. Steel--Carbonization 2. Kerosene--Performance

L. F.

Card 2/2


SOV/81-59-7-24828

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 466 (USSR)

AUTHOR: Gurevich, I.L.

TITLE: The Problem of Desulfuration of Petroleum //

PERIODICAL: V sb.: Sostav i svoystva vysokomolekul. chastí nefti, Moscow, AS USSR, 1958, pp 364 - 367

ABSTRACT: A diagram is proposed of the process of continuous adsorption of S-compounds from raw material to be processed which is diluted with gasoline. At the ratio adsorbent : percolate = 1.7 : 1 diesel fuel is obtained with a minimum S content of 0.2%. 

M. Rudenko

Card 1/1

GUREVICH, I.L.; SARDANASHVILI, A.G.; KISELEV, B.D.

Removal of aromatic hydrocarbons from soft paraffins. Trudy.
MINKHiGP no.28:116-125 '60. (MIRA 14'4)
(Paraffins) (Hydrocarbons)

S/081/62/000/011/037/057
E075/E136

5 2300
AUTHOR: Gurevich, I.L.

TITLE: New fuel variant for the refining of sulphurous crudes.

PERIODICAL: Referativnyy zhurnal, Khimiya, no.11, 1962, 516,
abstract 11 M174. (Novosti نفت. i gaz. tekhn.
Neftepererabotka i neftekhimiya, no.3, 1961, 3-6).

TEXT: An essentially new scheme for the refining of sulphurous crudes is proposed by the Moskovskiy institut neftekhimicheskoy i gazovoy prom-sti (Moscow Institute of the Petrochemical and Gas Industry), based on the adsorption and extraction processes. After a long study under laboratory conditions and pilot plants, four variants for the adsorptional removal of organic sulphur compounds from petroleum and its fractions were proposed:
1) adsorptional desulphurization of crude oils; 2) adsorptional desulphurization of separate distillates; 3) adsorptional desulphurization of a wide fraction (up to 350 °C);
4) adsorptional desulphurization of a wide fraction (up to 500 °C).
In the refinery schemes the application of adsorptional refining will permit drastic lowering of the sulphur content in the
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New fuel variant for the refining...

S/081/62/000/011/037/057
E075/E136

fractions and exclude the hydrofining.

[Abstractor's note: Complete translation.]

Card 2/2

S/081/62/000/004/067/087
B150/B138

AUTHOR: Gurevich, I. L.

TITLE: Desulfurizing a diesel fuel fraction by diethylene glycol

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 478, abstract
4M141 (Novosti نفت. i gaz. tekhn. Neftepererabotka i nefte-
khimiya, no. 4, 1961, 15-16)

TEXT: Laboratory investigations of the extraction of S-organic compounds from kerosine and gas oil fractions by counterflow extraction with diethylene glycol (I) established that I is an effective solvent of the aromatic and S-organic compounds. The depth of dearomatization and desulfurization of the diesel fuel fraction depends, in particular, on the ratio of I to the crude and on the extraction temperature: with an increase of the repetition factor of I, and also in the extraction temperature, the degree of extraction of the SE compounds increases. With an appropriate routine procedure for extraction of the S-organic substances from the kerosine and gas oil fractions of the sulfurous petroleum, it is possible to

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Desulfurizing a diesel fuel...

S/081/62/000/004/067/087
B150/B138

produce diesel fuels with a minimum ($< 0.2\%$) content of S. The commercialization of the process is not complicated and the operational costs are not large. [Abstracter's note: Complete translation.]

Card 2/2

Z/011/61/018/012/004/007
E073/E535

AUTHORS: Gurevich, I.L. and Zhake, L.Yu.
TITLE: Triethyleneglycol as a selective solvent of aromatic hydrocarbons
PERIODICAL: Chemie a chemická technologie; Přehled technické a hospodářské literatury, v.18, no.12, 1961, 560, abstract Ch61-7748 (Khimiya i tekhnologiya topliv i masel, no.5, 1961, 11-14)
TEXT: The advantages are proved of triethyleneglycol as compared to diethyleneglycol as a solvent for extracting aromatic solvents and the efficiency of multi-stage extraction during de-aromatisation. Graphical methods applied for determining the number of extraction steps were verified; these can be used in practice for obtaining fractions with the desired properties. 4 figures, 2 tables, 12 references. ✓
[Abstractor's note: Complete translation.]

Card 1/1

33444

5/065/62/000/002/001/004
E075/E485

11.9100

AUTHORS: Gurevich, I.L., Zhake, L.Yu.

TITLE: Isolation of pure aromatic hydrocarbons

PERIODICAL: Khimiya i tekhnologiya topliv i masel, ¹no.2, 1962, 7-12

TEXT: Laboratory experiments have been carried out to study isolation of aromatic hydrocarbons in high degree of purity by means of extraction with triethyleneglycol containing 10% water. It was established previously that the addition of water increases the selectivity of the glycol and leads to an increased concentration of aromatics in the extract. A mixture of 36.5% benzene and 63.5% n-heptane was used in all the experiments. Benzene was isolated by a multistep countercurrent extraction with recirculation carried out in separating funnels according to a scheme shown in Fig.3. Separating funnels corresponding to various stages of extraction for the raffinate part of the scheme are represented by squares marked by Arabic numerals and for the extract part by Roman numerals. In the first period solvent T is introduced into stage 2 where it meets solution C. Raffinate P₂ obtained after mixing and standing is transferred to stage 1 and extract D₂ transferred to stage I of the extraction

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S/065/62/000/002/001/004
EO75/E485

Isolation of pure aromatic

section of the column. In the first period raffinate P₂ is de-aromatized with another quantity of solvent I in stage 1 and is then removed from the system. This procedure is continued until the fifth period of extraction is reached whereupon the composition of the products is stabilized. The temperature of extraction was 20°C and the ratio of solvent solution 3:1. To increase the concentration of aromatic hydrocarbons in the extract, an extraction column is used fitted with an extracting section and a system for the introduction of recirculating aromatic hydrocarbons. In the scheme in Fig.3 this is represented by squares I and II and arrow R. To obtain an extract containing high purity aromatic hydrocarbons, the concentration of the latter in the recirculating current was 99.6% and the fraction of recirculating liquid was 0.38 of the solution. This process with one stage gave an extract containing 99.3% benzene in 77.9% yield and raffinate containing 93.2% benzene in 22.1% yield. Extraction with two stages in the extracting section gave an extract containing 99.5% benzene with 95.5% yield and raffinate containing 63.7% benzene in 4.6% yield. Calculation of the necessary quantities of recirculating liquid
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E075/E485

Isolation of pure aromatic ...

and number of stages of extraction for obtaining products of required quality was carried out by drawing triangular diagrams of the type described in Ref.8 (Alders L. Liquid-liquid extraction, 1955, in Russian translation IL, 1957) and Ref.9 (Perry. Chemical Engineers Handbook, 1950). There are 4 figures and 9 references: 1 Soviet-bloc, 1 Russian translation from non-Soviet-bloc publication and 7 non-Soviet-bloc. The four most recent references to English language publications read as follows:
Ref.2: Petroleum, XX, no.10, 1957, 374;
Ref.3: Petroleum Refiner, May, v.97, 1952;
Ref.4: Oil and Gas. May, v.55, no.21, 1957, 180;
Ref.5: Petroleum Refiner, no.11, 1957, 304.

ASSOCIATIONS: MINKh

GP im. I.M.Gubkina

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